

XVIII

REPORT OF THE DIRECTOR FOR THE YEAR 1926

BY

BARTON WARREN EVERMANN

Director of the Museum and of the Aquarium

The Annual Report of the Director for the year 1925 was presented to the Academy at the Annual Meeting, February 17, 1926.

The present report sets forth briefly the scientific and educational activities of the Academy for the calendar year 1926. On the whole, the year has been a satisfactory one. The members of the clerical force have performed their respective duties with a high degree of fidelity and efficiency. The members of the scientific staff have been very active in building up and caring for the collections in their respective departments and in research work based upon the collections in their care.

PERSONNEL

There have been but few changes in the personnel of the Museum staff in the year. The death on March 10, 1926, of Eric Knight Jordan, Assistant Curator, Department of Paleontology, was a severe blow to the Academy and took from the staff one of its most useful members. Mr. Leo George Hertlein who had been for some months an assistant in the department, was made Assistant Curator April first.

Ignatius McGuire was employed August 19 to December 7, and Miss Lucie Hicks from September 16 to December 31, as temporary assistants in the library, to card catalogue and arrange our duplicate publications. E. L. Rixford was employed in the Department of Paleontology from June 28 to August 6 and September 13 to September 25. Raleigh A. Borrell was employed in the Department of Ornithology and Mammalogy, as an assistant to Curator Mailliard in his field work from May 16 to August 12. Raymond M. Gilmore was em-

ployed in the same capacity from August 25 to October 9. Miss Clara Tose was employed as a temporary assistant in the Department of Botany and elsewhere at intervals in January, February, July and August.

The employes of the Museum January 1, 1927, were as follows: Dr. Barton Warren Evermann, Director and Executive Curator of the Museum, Editor of the Academy publications, and Director of the Steinhart Aquarium; W. W. Sargeant, Secretary to the Board of Trustees; Miss Susie Peers, Secretary to the Director; Joseph W. Hobson, Recording Secretary; Mrs. Constance W. Campbell, office assistant, part time; Raymond L. Smith, office assistant; Miss Mabel E. Phillips, check-room attendant; Miss Alice Eastwood, Curator, and Mrs. Kate E. Phelps, assistant, Department of Botany; Edward P. Van Duzee, Curator, Dr. F. R. Cole, Associate Curator in Dipterology, Hartford H. Keifer, Assistant Curator, and J. O. Martin, temporary assistant, Department of Entomology; Barton Warren Evermann, Curator, and H. Walton Clark, Assistant Curator, Department of Fishes; Joseph R. Slevin, Assistant Curator, Department of Herpetology; Dr. G. Dallas Hanna, Curator, and Leo George Hertlein, Assistant Curator, Department of Paleontology; Joseph Mailliard, Curator, and Miss Mary E. McLellan, Assistant Curator, Department of Ornithology and Mammalogy; Dr. Walter K. Fisher, Curator, Department of Invertebrate Zoology; Joseph Mailliard, Chief of Exhibits; Frank Tose, Chief Taxidermist; Russell Hendricks and Cecil Tose, temporary assistants, Department of Exhibits; Edward P. Van Duzee, Assistant Librarian; C. A. Bellas, Library assistant; Miss Lucie Hicks, Library assistant; Wm. C. Lewis, Janitor; Hugh Jones, assistant janitor; Mrs. Johanna E. Wilkens, charwoman; Patrick O'Brien, day watch; Archie McCarte, night watch.

ACCESSIONS TO THE MUSEUM AND LIBRARY

Many valuable accessions to the Museum, Library and Aquarium have been received within the year. An itemized list will be found in the files of the Academy.

COOPERATION WITH PUBLIC AND PRIVATE SCHOOLS, WITH OTHER INSTITUTIONS, AND WITH INDIVIDUALS

Cooperation of the Academy with public and private schools, other institutions, and with individuals, continued during the year as in the past. Thirteen portable habitat groups have been in circulation during the school year in the Berkeley public schools where the value of proper nature study appears to be most fully appreciated in the Bay region. Additional loan exhibits will be made available whenever there is a demand. Loans of specimens of birds or other natural history objects have been made to a number of schools, institutions and individuals. Lists are in our files.

VISITORS TO THE MUSEUM IN 1926

The total number of visitors to the Museum in the calendar year 1926 was 575,159, an increase of 21,736 over that for 1925, and 18,143 more than visited the U. S. National Museum in the same period. The average daily attendance was 1576.

The number of visitors by months and years since the opening September 22, 1916, is shown in the following table :

VISITORS TO MUSEUM

	1916	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926
January.....	23170	25260	17241	27013	25755	19038	15270	32364	34989	26528	
February.....	22058	23698	17586	23450	25679	18534	20529	44439	29295	34183	
March.....	31606	26810	27397	25419	28279	27922	26341	39935	39168	38677	
April.....	32175	23274	25994	32208	24939	36057	21911	41332	40257	36746	
May.....	26154	26391	28369	37107	25517	27237	37597	48152	38137	52913	
June.....	32123	29843	32248	36207	29406	27131	39511	58281	51775	53799	
July.....	37193	31420	48028	52492	43186	36263	64530	91329	69921	83707	
August.....	24619	31137	43730	53470	39422	34787	50849	105130	77847	81362	
September.....	16448	27866	29847	34007	42013	31458	28408	69870	82814	63737	57615
October.....	36933	20629	14743	30463	33500	24861	19459	66894	43074	40418	44654
November.....	27718	21810	8531	25246	19347	18593	19080	48766	37611	35634	30420
December.....	15002	21693	19588	21188	21340	15062	13339	36707	21572	32245	34555
Totals.....	96101	321096	290542	351497	403566	332157	307255	498775	646033	553423	575159

The total number of visitors since the opening, September 22, 1916, has been 4,375,604.

VISITS OF PUBLIC AND PRIVATE SCHOOLS

The public and private schools of the state continue to avail themselves of the educational uses of the Museum exhibits and reference collections.

The number of schools visiting the Museum is so great that the full list cannot be printed here. The following summary must suffice:

Schools of San Francisco:

Number of Visiting Pupils	5103	5103
Number of Visiting Teachers	173	
Number of Visiting Classes	195	
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Schools Outside of San Francisco:

Number of Visiting Pupils	1881	1881
Number of Visiting Teachers	58	
Number of Visiting Classes	21	
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Total, Pupils	6984	
Total, Teachers	231	
Total, Classes	266	

USE OF THE LIBRARY AND COLLECTIONS
BY INVESTIGATORS AND STUDENTS

Use of the Academy library and collections by students and investigators continues to be one of the ways in which the Academy is doing real service to the general public as well as to specialists. The library is growing more and more valuable every year. During the past year many important reference works have been added and a number of popular books on travel and the various sciences have been acquired. On the library reading tables are kept many of the current publications of learned societies throughout the world, also many of the scientific journals and outing magazines. Members of the Academy are invited to visit the library and make use of the facilities which it affords for information and aid in other ways.

STEINHART AQUARIUM

The activities of the Aquarium for 1926 are fully covered in the report of the Superintendent.

The total number of visitors for the year was 953,797, a somewhat smaller number than in 1925.

Our chief source of supply of fishes and other live animals continues to be the southern California coast, Monterey Bay, the fishing boats out from San Francisco, the freshwater streams of central California, the upper Mississippi Valley, and Honolulu. Numerous specimens of fishes, turtles, snakes, frogs, etc., have been donated to the Aquarium by interested friends, to all of whom the Academy expresses grateful appreciation.

The Aquarium has, on the other hand, supplied a large number of small aquarium fishes and other objects to schools and individuals, a full list being in our files. Those that have been supplied to schools should prove of much interest. The increasing tendency of teachers toward maintaining aquariums in their schools is to be strongly commended.

AQUARIUM PERSONNEL

Several changes in the personnel of the Aquarium have taken place within the year. These have been due chiefly to our inability to retain the engineers and feeders on the small salaries we are able to pay.

The Aquarium personnel January first, 1927, was as follows:

Dr. Barton Warren Evermann, Director, part time; W. W. Sargeant, Secretary, part time; Susie Peers, Secretary to the Director, part time; Constance W. Campbell, office assistant, part time; Alvin Seale, Superintendent; Wallace Adams, Assistant Superintendent; Clynt S. Martin, Chief Engineer; R. J. Fletcher, assistant engineer; B. T. Culleton, assistant engineer; C. J. MacMeekin, relief engineer and feeder; Robert J. Lanier, electrician and assistant attendant; C. E. Guidry, assistant attendant; Jack Solini, assistant attendant; L. R. Solini, assistant attendant; Herbert Brandt, assistant collector; S. J. Shenefield, carpenter and general utility man; Dora Arnold, doorkeeper; Patrick O'Neill, janitor; Frank J. Maxwell, assistant janitor; James Cavanaugh, police officer.

VISITORS TO THE STEINHART AQUARIUM

The popularity of the Steinhart Aquarium continues. The total number of visitors in the calendar year 1926 was 953,797, as against 1,043,591 in 1925. The daily average was 2601. The attendance by months and years since the opening, September 29, 1923, is shown in the following table:

Visitors to Steinhart Aquarium

MONTH	1923	1924	1925	1926
January.....		82283	72153	38259
February.....		119001	61213	66032
March.....		88172	97986	82153
April.....		83245	79021	64830
May.....		97083	75187	94521
June.....		112785	94717	91451
July.....		145703	128261	127999
August.....		148899	144208	124635
September.....	29800	116032	106492	86645
October.....	209671	71273	72350	79108
November.....	145434	67500	59074	49741
December.....	96757	48376	52929	48423
Totals.....	481662	1180352	1043591	953797

The total number since the opening, September 29, 1923, to the end of the calendar year 1926, has been 3,659,402, a daily average of 3,077.

A list of the schools that visited the Aquarium in 1926 may be found in the Academy's files.

DEPARTMENT ACTIVITIES

The several departments of the Academy have been very active during the year in field work, in building up the research collections, preparing and installing exhibits, caring for the collections and exhibits, and in other scientific and educational activities. The details for each department are fully set forth in the departmental reports.

Department of Botany.—Miss Eastwood, Curator of Botany, made a number of short field trips, chiefly to type localities for the purpose of securing for the herbarium topo-

types of as many as possible of the species originally described from those localities. In this she was fairly successful. The growth of the herbarium has been very satisfactory. The total number of mounted sheets is now 143,566.

Exhibits.—Perhaps the most important event in the year in the Department of Exhibits was the rearrangement of the Grizzly Bear group, including the painting by Captain Charles Bradford Hudson of a new background.

The group now shows a scene on Jackson Lake, Wyoming, with the Grand Teton in the background. The foreground, including the animals and the accessories, has been rearranged. This and the new background have greatly improved this really wonderful group.

Another important event in connection with this department was the visit of Mr. Tose to many of the museums in the East in September and October for the purpose of studying the latest developments in the preparation, installation and lighting of habitat groups and other exhibits. It is believed the information and knowledge acquired by Mr. Tose on this trip will prove very useful in his work for the Academy.

Three new panel groups were installed by Mr. Tose in the year; they are the Redwood Weasel, the Mountain Quail, and the Mendocino Flying Squirrel, all very interesting groups.

The total number of habitat groups now completed is 52, of which there are in the Mammal Hall 11 large, four intermediate, and 18 small panel groups; in the Bird Hall, six large and 12 small panel groups; and in the Aquarium, one large group, as shown in the following list in which the names of the large groups are printed in CAPITALS, the intermediate groups in *italics*, and the small panel groups in roman:

*California Mammal Hall*¹—

1-Desert Wood Rat	6-Redwood Brush Rabbit
2-ROOSEVELT ELK	7-Mountain Beaver
3-Western Bushy-tail Wood Rat	8-NORTHERN BLACK-TAIL DEER
4-Yellow-bellied Marmot	9-Desert Antelope Ground Squirrel
5-SAN JOAQUIN VALLEY ELK	

¹ The groups are listed in order beginning with the first at the right as one enters the hall.

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|--|------------------------------------|
| 10-California Ground Squirrel | 21- <i>Mountain Lion</i> |
| 11-IMPERIAL GRIZZLY BEAR | 22- <i>Northwestern Black Bear</i> |
| 12-Tahoe Chipmunk | 23-Mendocino Flying Squirrel |
| 13-Sierra Golden-mantled Ground Squirrel | 24-ALASKA FUR SEAL |
| 14-ROCKY MOUNTAIN MULE DEER | 25-Alaska Fur-Seal Skins |
| 15-California Ring-tail Cat | 26-Red Tree-Mouse |
| 16-Warner Mountain Cony | 27-LEOPARD SEAL |
| 17-ANTELOPE | 28-CALIFORNIA SEA LION |
| 18-Allied Kangaroo Rat | 29-California Woodpecker |
| 19-Redwood Weasel | 30-STELLER SEA LION |
| 20-DESERT MOUNTAIN SHEEP | 31-Lewis's Woodpecker |
| | 32- <i>Raccoon and Skunk</i> |
| | 33- <i>Coyote</i> |

California Bird Hall—

- | | |
|------------------------------------|-------------------------------------|
| 34-Western Robin | 43-Burrowing Owl |
| 35-FARALLON ISLANDS BIRDS | 44-WHITE PELICAN |
| 36-Coast Bush-tit | 45-Lazuli Bunting |
| 37-California Linnet | 46-Water Ouzel |
| 38-SAN JOAQUIN VALLEY SPRING BIRDS | 47-CALIFORNIA CONDOR |
| 39-California Clapper Rail | 48-Sharp-shin Hawk |
| 40-Mountain Quail | 49-Nuttall Sparrow |
| 41-DESERT BIRDS | 50-SAN JOAQUIN DUCK AND GOOSE GROUP |
| 42-California Valley Quail | 51-Western Meadowlark |

Aquarium—

- 52-ELEPHANT SEAL

Entomology.—Edward P. Van Duzee, Curator of Entomology, reports commendable progress in his department.

The most notable event of the year in connection with this department was the acquisition of the Koebele Collection of insects, estimated to contain about 100,000 specimens, resulting from the many years of very active field collecting by the late Albert Koebele in California, Hawaii and elsewhere.

The Academy is deeply indebted to Mr. Walter M. Giffard of Honolulu for his successful efforts in securing this valuable collection. Mr. Giffard is a Life Member of the Academy and is constantly alert to opportunities to enrich the Academy's collections.

Herpetology.—The most important event in 1926 in connection with the Department of Herpetology, was the expedition to Guatemala by Joseph R. Slevin, the Assistant Curator. Mr. Slevin sailed from San Francisco April 17 and landed April 28 at Port of San José de Guatemala, whence he proceeded to Samayac and other points in the interior, where he devoted about five months to field collecting and observations, returning to San Francisco September 8.

The collection obtained contains 2277 specimens of reptiles and amphibians and is one of the most valuable that has ever been secured in that country. It is particularly rich in high mountain species of salamanders, and in many species of snakes not previously collected by the department. Through the courtesy of Captain H. W. Rhodes, Superintendent of Lighthouses, 18th Lighthouse District, Mr. Slevin visited the Farallon Islands October 15, and obtained a large series of the interesting salamander (*Ancides lugubris farallonensis*) which is known only from those islands.

Library.—The growth of the Library during the year has been satisfactory. The total number of accessions was 2541. A somewhat larger appropriation for library purposes made it possible for the various departments to purchase a number of technical publications, some of them quite expensive, much needed in the research work of the Museum.

Ornithology and Mammalogy.—The Department of Ornithology and Mammalogy carried on field work in Trinity, Humboldt, Mendocino, Modoc and Placer counties, California, which added much to our knowledge of the mammal and bird faunas of those parts of the state and many specimens of birds and mammals to the Academy's collections.

The Curator and Assistant Curator of this department were active during the year in research work on the collections. The Curator, Mr. Mailliard, was assisted in field work at intervals by various temporary assistants, including Raleigh A. Borrell, Raymond M. Gilmore and Paul F. Covel.

Paleontology.—The Department of Paleontology was active during the year in arranging and caring for the collections, in carrying on research work, and in field investigations. The

most important expedition was that into Lower California in January, by Assistant Curator Jordan and assistant Hertlein which resulted in valuable collections from several horizons not previously represented in the Academy's museum.

PUBLICATIONS BY THE MUSEUM STAFF IN 1926

The following bibliography lists the papers published in the year 1926 by members of the Museum and Aquarium staffs.

Eastwood, Alice

1. The Aftergrowth of a Mountain Fire. <Out-of-Doors, January, 1926.
2. Annual Report, Department of Botany for 1925. <Proc. Calif. Acad. Sci., 4th Ser., Vol. XIV, No. 20, pp. 536-537, April 28, 1921.

Evermann, Barton Warren

1. A Bird that Flies Under Water. <Pacific Sportsman, Vol. II, No. 2, 13, 1 plate, February, 1926.
2. (Report of Chairman), Section on Scientific Research of the Commonwealth Club of California for the year 1925. <The Commonwealth, Vol. II, No. 9, 502-503, March 2, 1926.
3. Wonders from the Deep; Honolulu's Fish Markets. <Aloha, Vol. 7, No. 1, 2 pages, 2 illustrations, March, 1926.
4. Annual Report, Director of the Museum. <Proc. Calif. Acad. Sci., 4th Ser., Vol. XIV, No. 20, pp. 521-559, April 28, 1926.
5. Frank Davis—An Appreciation. <Kokomo Dispatch, Kokomo, Ind., July 4, 1926; also in <Delphi Journal, Delphi, Ind., July 15, 1926.
6. The Fur-Seal in the Pacific. <The Mid-Pacific Magazine, Vol. XXXII, No. 3, 207-212, September, 1926.
7. A Review of the Giant Mackerel-Like Fishes, Tunnies, Spearfishes, and Swordfishes. (Junior author with David Starr Jordan.) Occasional Papers of the California Academy of Sciences, No. XII, 113 pages, 20 plates, 1 text-figure, September 30, 1926.

Hanna, G. Dallas

1. Microscopical Research in California Petroleum Fields. <The Oil and Gas Journal (Tulsa, Oklahoma), Vol. 24, No. 45, p. 96, April 1, 1926.
2. Paleontology of Coyote Mountain, Imperial County, California. <Proc. Calif. Acad. Sci., 4th Ser., Vol. 14, No. 18, pp. 427-503, pls. 20-29, 1 text figure, March 23, 1926.

3. Annual Report, Department of Paleontology for 1925. <Proc. Calif. Acad. Sci., 4th Ser., Vol. 14, No. 20, pp. 546-547, April 28, 1926.
4. Expedition to the Revillagigedo Islands, Mexico, in 1925. General Report. <Proc. Calif. Acad. Sci., 4th Ser., Vol. 15, No. 1, pp. 1-113, pls. 1-10, text figures 1-7, March 30, 1926.
5. Expedition to the Revillagigedo Islands, Mexico, in 1925. II. Miocene Marine Diatoms from Maria Madre Island, Mexico. By G. Dallas Hanna and William M. Grant. <Proc. Calif. Acad. Sci., 4th Ser., Vol. 15, No. 2, pp. 115-193, pls. 11-21, 1 text fig., April 6, 1926.
6. Further Notes on *Scaloz petroliola*. <The Nautilus, Vol. 40, No. 1, pp. 14-16, July, 1926.
7. Notes on the age and correlation of the Moreno Shale. By J. A. Taff and G. D. Hanna. <Bull. Am. Assoc. Petrol. Geol., Vol. 10, No. 8, pp. 812-814, August, 1926.
8. Concerning Shark-Tooth Hill. <Standard Oil Bulletin, Vol. 14, No. 4, pp. 12, 16, 2 figures (teeth of shark and sea cow), August, 1926.
9. Disintegrating shales by mechanical attrition. <Micropaleontology Bulletin, No. 3, pp. 1-2 (issued by mimeograph), Dec. 15, 1926.
10. Grizzly Bear specimen at S. F. Academy. <San Francisco Examiner, Second main news section, p. N. 5, Sunday, Nov. 21, 1926.

Hertlein, Leo George

1. A Pliocene Fauna from Maria Madre Island, Mexico. <Proc. Calif. Acad. Sci., 4th Ser., Vol. 15, No. 4, pp. 209-217, April 26, 1926. (With Eric Knight Jordan).
2. Contribution to the Geology and Paleontology of the Tertiary of Cedros Island and Adjacent Parts of Lower California. <Proc. Calif. Acad. Sci., 4th Ser., Vol. 15, No. 14, pp. 409-464, July 22, 1926. (With Eric Knight Jordan).

Jordan, Eric Knight

1. Molluscan Fauna of the Pleistocene of San Quintin Bay, Lower California. <Proc. Calif. Acad. Sci., 4th Ser., Vol. 15, No. 7, pp. 241-255, April 26, 1926.
2. A Pliocene Fauna from Maria Madre Island, Mexico. <Proc. Calif. Acad. Sci., 4th Ser., Vol. 15, No. 4, pp. 209-217, April 26, 1926. (With Leo George Hertlein).
3. Contribution to the Geology and Paleontology of the Tertiary of Cedros Island and Adjacent Parts of Lower California. <Proc. Calif. Acad. Sci., 4th Ser., Vol. 15, No. 14, pp. 409-464, July 22, 1926. (With Leo George Hertlein).

Mailliard, Joseph

1. Census of Birds' Nests in the Music Concourse, Golden Gate Park, San Francisco, California, for 1925. <The Gull, Vol. VIII, No. 2, February, 1926.
2. A First Experience in Bird Banding. <The Condor, Vol. XXVIII, No. 2, pp. 70-73, March 15, 1926.
3. Annual Report, Department of Exhibits for 1925. <Proc. Calif. Acad. Sci., 4th Ser., Vol. XIV, No. 20, pp. 540-541, April 28, 1926.
4. Annual Report, Department of Mammalogy for 1925. <Proc. Calif. Acad. Sci., 4th Ser., Vol. XIV, No. 20, pp. 543-544, April 28, 1926.
5. Annual Report, Department of Ornithology for 1925. <Proc. Calif. Acad., 4th Ser., Vol. XIV, No. 20, pp. 544-546, April 28, 1926.
6. Townsend Solitaire Singing in the Autumn. <The Condor, Vol. XXVIII, No. 3, p. 127, May 15, 1926.
7. Another Straggler Reaches the Pribilofs. <The Condor, Vol. XXVIII, No. 3, p. 133, May 15, 1926.
8. A California Pigmy Owl Bathes. <The Condor, Vol. XXVIII, No. 4, p. 171, July 15, 1926.

McLellan, Mary E.

1. Expedition of the California Academy of Sciences to the Revillagigedo Islands. <Science, n. s., Vol. LXII, No. 1599, pp. 171-173, August 21, 1925.
2. Expedition to the Revillagigedo Islands, Mexico, in 1925. VI. The Birds and Mammals. <Proc. Calif. Acad. Sci., 4th Ser., Vol. XV, No. 11, pp. 279-322, May 20, 1926.

Scale, Alvin

1. Annual Report Superintendent Steinhart Aquarium for 1925. <Proc. Calif. Acad. Sci., 4th Ser., Vol. XIV, No. 20, pp. 547-549, April 28, 1926.
2. Review of the Engraulidæ, with descriptions of New and Rare Species. (Junior author with David Starr Jordan). <Bull. Museum of Comparative Zoology, Harvard University, Vol. LXVII, No. 11, pp. 355-418, May, 1926.

Slevin, Joseph R.

1. Notes on a Collection of Reptiles and Amphibians from the Tres Marias and Revillagigedo Islands, and West Coast of Mexico, with Description of a New Species of *Tantilla*. <Proc. Calif. Acad. Sci., 4th Ser., Vol. XV, No. 3, pp. 195-207, plate 22, April 26, 1926.
2. Annual Report Department of Herpetology for the year 1925. <Proc. Calif. Acad. Sci., Vol. XIV, No. 20, pp. 542, April 28, 1926.

Van Duzee, Edward P.

1. Annual Report of the Department of Entomology for 1925. <Proc. Calif. Acad. Sci., 4th Ser., Vol. XIV, No. 20, pp. 538-539, April, 28, 1926.
2. Note on *Labops burmeisteri* Stal. <Pan-Pacific Entomologist, Vol. II, p. 163, April, 1926.
3. An Entomological Code. <Pan-Pacific Entomologist, Vol. II, pp. 214-215, April, 1926.
4. *Typhlocyba* vs. *Eupteryx*. <Pan-Pacific Entomologist, Vol. III, pp. 45-46, July, 1926.

ACKNOWLEDGMENTS

An unusual number of courtesies of one kind or another have been shown the Academy by many individuals and by various institutions. Space does not permit specific mention of all, but the Academy is grateful to all who have shown interest in its work or who have helped it in any way.

First of all must be mentioned those who have contributed to the educational activities of the Academy by giving one or more lectures in our Sunday afternoon and Wednesday evening lecture courses. The Academy's thanks are due also to each of those who have donated specimens to the Museum or the Aquarium or books to the library.

Special acknowledgment must be made of the Academy's appreciation of the deep interest which the Southern Pacific Company, the Atchison Topeka, and Santa Fe Railway System, the Matson Navigation Company, and the Los Angeles Steamship Company have shown in the scientific and educational activities of the Academy. Each of these companies has extended many courtesies to members of the staff and has rendered valuable assistance in connection with the field work of the Museum and the Aquarium. Through their cooperation the Museum and Aquarium collections have been materially increased in number and value.

The Academy is also deeply grateful to Señor Juan Zenon Posadas of Guatemala for many courtesies extended to Mr. Slevin while collecting reptiles and amphibians in that country in 1926. Mr. L. M. Klauber of the San Diego Zoological Park and Mr. Richard P. Erwin of Boise, Idaho, have shown the Academy many courtesies, including the donation of valuable specimens.

Thanks are due also to Captain H. W. Rhodes, Superintendent of the 18th Lighthouse district, who kindly arranged for a visit to the Farallon Islands of a number of the Museum staff for the purpose of securing specimens of the plants and of the rare salamander found there. Mention must be made also of the valuable services of Mr. Walter M. Giffard of Honolulu in securing, through Attorney E. K. Taylor of Alameda the large Koebele collection of insects containing about 100,000 specimens. This collection was donated to the Academy by the widow of Dr. Koebele, Mrs. Fanny Koebele, now of Waldkirch, Germany, to whom grateful acknowledgment is made.

The Academy's grateful thanks are due to Mr. B. Preston Clark of Boston for the donation of a splendid series of hawk-moths numbering 567 specimens purchased by Mr. Clark in England. Many other valuable donations have been made to the Museum and Aquarium which are acknowledged in the various departmental reports.

Special mention must be made of the splendid cooperation and assistance rendered by Mr. W. H. Shebley, in charge of fish culture of the California State Fish and Game Commission, and other officials of the Commission, in connection with the Aquarium. They are always ready and willing to assist us in securing live fishes for our exhibits.

NEEDS OF THE MUSEUM

I feel that it is my duty again to call attention to a few of the more urgent needs of the Museum. The greatest and most pressing need is that of additional room for new exhibits, for our educational activities, for our rapidly growing research collections, and for library purposes. Each of the three public halls of the Museum is already congested. Several exhibits in each do not properly belong there but are there because there is no other place to put them. Each of the departments of botany, entomology, herpetology and paleontology has material that would make excellent public exhibits if there only were suitable halls in which to display them. Among other very instructive exhibits which can be promptly installed when space becomes available may be mentioned the following: 1. An exhibit showing the different fur-bearing

animals of the state. This would include a pair of mounted animals of each species, together with a prime and an unprime skin of each. 2. Several groups of gigantic tortoises, a very large leatherback turtle, lizards, snakes, etc. 3. Seasonal groups of the birds of Golden Gate Park. 4. A series of groups of intermediate size, such as Golden Eagle, Bald Eagle, Osprey, Red-tail Hawk and other Hawks, various Owls, Sage Hen, Mink, Wolverine, Badger, Fox, Marten, Fisher, Jack Rabbit, etc. 5. A synoptical series of the birds of the San Francisco Bay region.

The present auditorium is wholly inadequate and unsatisfactory in every way. In the first place, it is too small to accommodate the audiences that attend the Sunday afternoon lectures which are given throughout the year, except during the summer vacation. The seating is really disgraceful; for the most part the seats are old benches very unsubstantial, uncomfortable and unsightly. The acoustics are very poor and the ventilation is abominable. When the East wing is built it is the intention that it shall contain an auditorium, up to date in every respect, and ample for all lecture audiences and other public functions of the Academy. When this is provided the present lecture hall will become available for six or eight additional habitat bird groups.

Should the construction of the East wing at an early date be found impossible then I strongly recommend that the whale court be inclosed and made into an exhibition hall. This can be done at relatively slight expense and would provide space for a considerable number of habitat groups of various sizes, also for additional library, laboratory and office space.

Library Endowment.—Another pressing need is an endowment for the Library which, through exchanges, donations and purchases, has been growing rapidly during the past few years, in spite of the small allotments that it has been possible to include in the budget each year. Many publications, transactions of learned societies, reports of early exploring expeditions, and special technical papers we have been unable to get because the cost is prohibitive. It seems to me one of the best ways to meet the constant and increasing needs of the Library is by means of an endowment of about \$250,000, which would yield an annual income of \$12,000 to \$13,000

to meet all expenses connected with the Library, including salaries of librarian and assistants, purchase of books, subscriptions to proceedings and transactions of such learned societies as will not supply their publications by exchange, subscriptions to technical and popular magazines and periodicals, binding, and all other expenses properly connected with the building up and care of a library.

Publication Endowment.—Of equal importance are the publications of the Academy. These are *Proceedings*, *Occasional Papers*, *Memoirs*, and *Bulletins*. A volume of *Proceedings* has usually been published annually since 1854, when volume 1 of the First Series was published. The First Series consists of seven volumes (I to VII, 1854 to 1876), totaling 1932 pages. The Second Series began in 1888, and ended in 1896 (Vols. I to VI), with a total of 3417 pages. The Third Series began in 1897 and closed in 1906; 9 volumes with a total of 2918 pages. The Fourth Series began after the fire in 1906 and is the current series which to the close of 1926 totaled 15 volumes (I to XV), 7420 pages of text, and 547 plates, mostly halftones, but some colored.

The series known as *Occasional Papers* began in 1890 and has appeared from time to time as the designation indicates. Up to the present time 12 numbers (I to XII) have been published, with a total of 4040 pages, and 262 plates.

Of *Memoirs* only four volumes and part of a fifth have been published. These appeared from 1868 to 1905 and contain a total of 1070 pages, and 135 plates.

A *Bulletin* was published from 1884 to 1887, two volumes only, totaling 930 pages and 20 plates.

It is chiefly through its publications that the scientific activities of the Museum staff of the Academy are reflected; and it is through our publications that the Academy and the scientific men and women connected with it become known and attain standing in the world of science.

A staff of trained experts is kept busy preparing portable habitat groups and other exhibits of educational value which are loaned to the schools for use in their nature study and elementary science program and are kept circulating among

the schools during the school year. Field Museum of Natural History now has more than 1000 such cases or exhibits. New ones are being added at frequent intervals. The endowment was originally \$250,000, but Mr. Harris and his family were so impressed by the splendid results that they recently increased their gift by \$125,000.

I am informed that the Chicago school authorities regard "The N. W. Harris Public School Extension of Field Museum of Natural History" as the greatest and most effective single agency in the education of the youth of Chicago.

The California Academy of Sciences is ready to put into operation a similar agency here in San Francisco whenever an endowment is provided. Is there not some public-spirited man or woman in California who will seize this opportunity to do a really great thing for the children of San Francisco and California?

There are several ways in which friends of the Academy can help it financially, a few of which may be mentioned:

1. *Unconditional gift*, the money to be used by the Academy in any way the Trustees think proper.
2. *Conditional gift*, to be used for a specific purpose specified by the donor.
3. *As an Endowment*, only the income from which may be used and only for the purpose named by the donor. Endowments may be established in any one of several forms, as follows:
 - a. The endowment may be established at once, the money invested, and the income used as it becomes available.
 - b. The endowment may be provided in the donor's will, and the normal income from the amount paid to the Academy annually, the endowment not to pass to the Academy until the donor's death.
 - c. The donor to provide in his will for an endowment the income from which will not be available for the Academy's use until after the estate has been distributed.

It would seem that there should be among the many friends of the Academy or other public-spirited citizens, a number of people to whom one or another of these opportunities would make a strong appeal.

DEPARTMENT REPORTS

DEPARTMENT OF BOTANY

During the year 1926 about 5000 mounted sheets of specimens were added to the herbarium, making a total of 143,566. There are besides these the collections (not yet mounted) from the Academy's expedition to the Revillagigedo and Tres Marias islands in 1925 which are still unlisted and unlabelled by the collector, Mr. Mason, besides a great many duplicates to be used in exchanges.

The Curator made several short trips chiefly to type localities and succeeded in securing topotypes of a number of species and collected altogether 650 specimens, besides many duplicates. Collections were made in San Luis Obispo County at Cambria, Cholame, Paso Robles, and Avila; in Santa Barbara County at Santa Barbara, Lompoc and Surf; in Kern County at Poso Creek near Bakersfield; in Fresno County at Coalinga, Alcalde and old Fort Miller at Friant; and in Monterey County at the Big Sur. Some specimens were added from San Francisco, Marin County and the Farallons.

Several important collections were received in exchange: 87 sheets from the New York Botanical Garden, Bronx Park, New York, chiefly Atlantic coast species; 186 from the University of Asia Minor, Taschkent, Turkestan, 13 genera and 185 being new to our collection; 293 from Pomona College, Claremont, California, chiefly duplicates from the Marcus E. Jones herbarium; and a set of 125 from the University of California, mainly Californian plants.

Mr. George Haley made important collections in Alaska, adding 436 specimens collected at Nome, Ketchikan and the following islands: St. Lawrence, Panak, Unalaska, Unimak, Kodiak, Sitka and some of the Shumagin Islands. In the collection were several topotypes. Half his expenses were paid by the Academy which received the entire collection.

The following collections were purchased: The A. D. E. Elmer Pacific Coast herbarium, consisting of 436 specimens, some of them probably the types of some of the many species named by him; 363 southern Oregon specimens from L. F. Henderson, University of Oregon, Eugene; 200 Mt. Rainier plants from the University of Washington, Seattle; 106 Texas plants, from Frank C. Seymour, Waltham, Mass., collected along the Gulf of Mexico; 333 Mexican plants collected by and purchased from Inez Mexia, San Francisco, collected chiefly in the mountains near Mazatlan, of which many are still unnamed but among those named are 7 genera and 90 species new to our collection; 250 Chilean plants from Dr. E. Werdermann, an authority on the flora of Chile, adding 13 genera and 183 species; a set of 100 lichens from G. K. Merrill, Rockland, Maine, who

is one of the authorities on this group, and of these 11 genera and 61 species were new to our collection.

The most important donations are as follows, almost all sent for identification: 124 Cecil Hart, Los Angeles; 148 E. Roy Weston, Bakersfield, from Kern County mountains and deserts; 44 Mrs. G. Earle Kelly, Alameda, southern California deserts; 56 Idaho, from Mrs. Rose Donaghe, Pocatello, Idaho; 96 San Luis Obispo and Monterey counties, from Chester Dudley of the U. S. Forest Service; 44 Tahoe Forest Reserve from L. S. Smith of the U. S. Forest Service; 46 from Ynes Mexia collected on Loma Prieta, Santa Cruz Mountains; 295 exotics collected chiefly in southern California by Eric Walther of Golden Gate Park to whom we are indebted for the greater part of our specimens of the exotics cultivated in the gardens throughout California; 107 from Milo S. Baker, collected on Mt. Rainier, southern Oregon and northern California. Smaller collections came in from 45 different correspondents whose names will appear in the general list of donors.

In continuation of exchange, duplicates have been sent to the following: 4 to Dr. Harold St. John, Agricultural College, Pullman, Wash.; 10 to Dr. J. Burt Davy, Imperial Forestry Institute, Oxford, England; 216 to the Arnold Arboretum, Jamaica Plain, Mass.; 23 to the National Herbarium, Washington, D. C.; 45 to the Botanic Garden, Sydney, Australia; 122 to the Royal Botanic Garden, Kew, England; 215 to the University of Asia Minor, Taschkent, Turkestan.

The collection of the exotics cultivated in California is constantly increasing. Specimens come in from all over the state for identification, and as the specimens are frequently incomplete and the native land unknown, it often takes much time for a satisfactory determination. Our herbarium is unexcelled in its collection of exotics and is the most cosmopolitan herbarium west of the Mississippi.

The Curator continues to give popular addresses to schools and clubs on botanical subjects and conservation and on some Sundays accompanies different clubs on excursions to interest the members in the native plants. The California Botanical Club which numbers 80 members holds weekly meetings or excursions except during the absence of the Curator. The class of gardeners meets twice monthly almost throughout the year in the herbarium Thursday evenings to enable the ambitious men to obtain a knowledge of the plants cultivated in the park.

The flower show that continues throughout the year in the vestibule of the Museum is an interesting and instructive feature of the museum. Hundreds of species both native and exotic are on exhibition at different times in the year, labelled with scientific and common name, if there is one, and the native home. My assistant, besides her regular herbarium duties, has taken charge of this during the past year and the exhibit is always most attractive. Friends throughout the state send in flowers occasionally and Mrs. E. C. Sutcliffe brings in flowers every week during the flowering season, while Eric Walther keeps up the supply of plants from the park.

Two collections of wild flower pictures have been properly installed in the Bird Hall of the museum, both donated by the California Botanical

Club. One is the collection of 480 pictures of Californian wild flowers so beautifully photographed and colored by Antone J. Soares and the other a collection of colored lithographs of New York flowers which were published by the State Museum of New York at Albany. They form a most interesting exhibit and are instructive as well as beautiful.

My assistant, Mrs. George H. Phelps, has been most efficient and faithful, attending to the mounting of the accessions, looking after the drying of the fresh specimens that continually come in, putting the mounted specimens into their proper places after distribution into families, looking after the flower show and many other duties that are continually arising in a growing herbarium.

Alice Eastwood, *Curator.*

DEPARTMENT OF ENTOMOLOGY

The acquisition of the Koebele Collection and the sustained growth of the general collection of insects, including some gifts of exceptional value, have marked the year's growth in this department.

For the securing of the Koebele Collection, the Academy is directly indebted to Mr. Walter M. Giffard of Honolulu. During the years Mr. and Mrs. Koebele were detained in Germany by war conditions, Mr. Giffard took charge of this collection and protected it from destruction by insect pests. After the death of Mr. Koebele it was through his suggestion, and the cooperation of Mr. E. K. Taylor of Alameda, that it was finally placed in the care of the Academy. During the past summer it was formally presented to the Academy by Mrs. Koebele as a memorial to her late husband, under practically the same conditions as those under which the Van Dyke, Van Duzee and Blaisdell collections came to the Academy. Mr. Giffard is to retain the parasitic Hymenoptera and Coccinellidæ or "lady beetles," and a few other restricted groups of insects that are of special interest to the Hawaiian entomologists; the great bulk of the material, however, comes to the Academy, making this one of the most valuable single units thus far added to its collection of insects.

The Koebele collection, estimated to contain 100,000 specimens, was accumulated during many years of active field work while Mr. Albert Koebele was carrying on investigations for the State of California, the U. S. Department of Agriculture, and the Hawaiian Sugar Planters Association. The field work undertaken by Mr. Koebele was primarily the discovery and introduction of parasitic and predacious insects to prey upon certain injurious species that from time to time became so destructive as seriously to menace important agricultural interests. Mr. Koebele and those collaborating with him really established the possibility and value of biological control of injurious insects. Their greatest triumphs were the control of the cottony cushion scale that had threatened the destruction of the citrus industry of California, and the sugar cane leaf hopper that had proved equally destructive to the sugar industry of the Hawaiian Islands. In the prosecution of this and similar work Mr. Koebele travelled widely through Japan, China, Australia and other oriental countries, and in Florida, Arizona, and Mexico on this continent, and wherever he went

he was able to add something of value to his collection of insects. Of most value to the Academy is his material in the Coccidæ and the moths, both of which groups are very fully represented in the Koebele collection, and will go far toward giving the Academy a good working series in these groups.

Another gift of unusual value to the Academy is a series of hawkmoths presented by Mr. B. Preston Clark of Boston, Mass. The 567 specimens in this series of large showy moths represent 265 species from all parts of the world, some of them of great rarity. They form one of the most interesting elements of the Academy collection of insects. Special mention should also be made of a collection of about 3000 English insects, made by Mr. C. L. Fox during a three months' visit to his native town of Plymouth, and neighboring parts of England. Of this number, 300 were named species presented by Mr. C. R. L. Perkins and Mr. J. H. Keys. It is a great advantage to our students to have determined European insects for comparison while studying our local forms, so this English collection is most acceptable. During the summer of 1926 Dr. E. C. Van Dyke spent two months collecting in the high mountains of Colorado. The beetles, of which there were 5165 specimens, have been incorporated into the Van Dyke collection of Coleoptera, already a most important unit of the Academy collection. Dr. Van Dyke has also presented to the Academy the miscellaneous insects of other orders, numbering 2837 specimens, taken by him on this Colorado trip. Other interesting additions to the Academy collection are 1338 specimens taken by Mr. J. R. Slevin in Guatamala, a most valuable addition; 1171 specimens taken by Mr. J. O. Martin in the White Mountains of Inyo County, California; 889 taken by Dr. Ernest Nast on a trip to Idaho and Montana, including many species new to the Academy collection; 857 taken by Mr. Clifford Dodds in southern California; 639 taken by Mr. A. Christoffersen in Alaska; 448 taken by Mr. W. M. Giffard in various parts of California; 430 taken by Mr. Louis S. Slevin at Carmel, California, including some very rare moths; 288 taken by Mr. M. C. Van Duzee at Mill Valley and about Buffalo, N. Y., and 240 presented by Mrs. H. E. Ricksecker. Smaller but valuable additions were made by E. R. Leach, J. T. Lamiman, G. D. Hanna, J. A. Kusche, Barton Warren Evermann, Ralph Hopping, Eric Walther, G. R. Wilson, G. P. Rixford, Otto Swezey, W. W. Jones, S. E. Flanders and J. E. Cottle. Prof. P. H. Timberlake gave us some interesting bees of the genus *Perdita*, including a number of paratypes; Mr. R. D. Hartmann a paratype of the very rare *Trachykele hartmanni*, and Mr. H. E. Burke a pair of another rare beetle, *Buprestis fremonti*.

Of the purchases the most interesting was a collection of 2426 insects from Che-Chiang Province, China, gathered by Mrs. Dora E. Wright, and 2400 from Fu-Chow, China, from Mr. C. R. Kellogg. These, together with the large collection made by Dr. E. C. Van Dyke in 1923 and presented to the Academy in 1924, give us a very good representation of the insects of that country.

No extended collecting trips were undertaken by the Department of Entomology in 1926, so the total additions by field work numbered but 4721. A part of these were taken by the curator in a four days' trip to



Lake County, California, as the guest of Dr. Ernest Nast, a part were taken by Mr. H. H. Keifer during a short vacation spent at Oroville, California, the balance being taken on week-ends about the Bay region. The total additions to the department collections during 1926 numbered 25,818 specimens, exclusive of the Koebele collection.

It is a pleasure to acknowledge the continued assistance received from Dr. Wm. Barnes, of Decatur, Illinois, who has most generously allowed his taxonomist, Mr. F. H. Benjamin, to study and determine many boxes of moths for us, a task Mr. Benjamin has most courteously performed, and has already added about 200 species of moths to the Academy collection from his duplicate material. Prof. T. D. A. Cockerell has continued his study of our bees; Prof. H. C. Fall has worked up for us the Chrysomelidæ of the Gulf of California expedition; Mr. M. C. Van Duzee worked part time for a while in the spring, on the determination of certain families of Diptera that had not been studied by Mr. Cole; and Mr. T. H. Frison of the Illinois State Natural History Survey has worked up our entire collection of bumblebees. Reports on these studies will soon be published by the Academy.

During the past year the curator has had the faithful and efficient help of Mr. H. H. Keifer in the preparation and labelling of the material that has come in, and without which it would have been impossible to have kept up with the rapid growth of the department. In addition to this Mr. Keifer has begun the development of a collection of microlepidoptera for the Academy, partly through the incorporation of material already in the museum but mostly by collecting and breeding out our local forms. This work and the study of the material he has done during odd hours, largely in the evenings. Mr. J. O. Martin has helped on part time throughout the year, incorporating the Van Dyke collection into that of the Academy. So far over 50,000 specimens have been transferred from the Van Dyke collection, but as yet the work is hardly more than a third completed. Dr. Van Dyke has given most generously of his time and effort, checking over all families of the beetles as they have been arranged by Mr. Martin and determining much of the unworked Academy material in the groups, as they are arranged into the unit boxes. The curator, during such hours as could be spared from his executive duties has continued the arrangement of the collections of Hemiptera and the macrolepidoptera.

The publication of the Pan-Pacific Entomologist has been continued throughout the year. Indirectly this has become a part of the work of the Department of Entomology, especially as an outlet for the shorter entomological papers submitted to the Academy for publication in its Proceedings, or founded upon the collections of the Academy. During 1926 nine such papers were published in this journal, with a total of 87 pages, or two-fifths of the total number of pages for the year.

The need for additional space for the proper development of this department is becoming a serious problem. In accepting these large valuable private collections the Academy assumes the responsibility of properly housing them, a matter that should receive proper attention before the limit of growth in the present laboratory has become exhausted.

EDWARD P. VAN DUZEE, *Curator.*

DEPARTMENT OF EXHIBITS

The first two months of the year 1926 were spent upon a complete re-arrangement of the Grizzly Bear Group in the Mammal Hall, as there yet were some noticeable defects that had not been overcome by the first alterations. A more appropriate background was painted by Mr. Charles Bradford Hudson, who is responsible for several of the most effective backgrounds in the Academy's series of habitat groups. The final arrangement of this group as planned by the department's group artist, Mr. Frank Tose, has met with the hearty approval of the donor, Mr. Ogden Mills.

Another month was devoted by Mr. Tose to the painting of the Leather-back Turtle cast he had made in 1925 for the Department of Herpetology.

For the purpose of keeping the Department of Exhibits in touch with the latest developments in taxidermy, making of accessory materials, arrangement and lighting of groups, and all matters pertaining to group work, Mr. Tose was authorized to visit such museums of the United States as make a feature of educational work of this nature. The months of September and October were devoted to this tour. Mr. Tose was well received by the staff members of the museums visited. Having been given cordial assistance in his studies of the latest methods introduced into group work and of the effects attained by their use, he returned to California with much additional information and knowledge of the sort that can be obtained only by personal observation and interchange of ideas with others intensively engaged in this line of work. Notes were kept of matters of special import; drawings were made of subjects difficult to describe; and there was obtained a series of photographs illustrating effects achieved by the use of the latest methods that have been evolved. The later part of the year was employed in putting into successful practice some of the best methods suggested by this museum tour.

Three more panel groups have been installed by Mr. Tose in the past year, these being the Redwood Weasel, Mountain Quail, and Mendocino Flying Squirrel. In addition to this, the California Ground Squirrel and the Tahoe Chipmunk groups have been so arranged as to show to much better advantage than did the originals.

In the series of habitat groups in the Academy's halls, the possibilities that exist in the scheme for placing before the public examples of animal life in its natural surroundings have barely been touched. The extent to which this educational work might be carried on is limited only by housing room and cost. Unfortunately, after the five remaining spaces still available for small pannel groups are filled, which will be in the coming year, this work will have to cease, unless more space can be provided, and for such provision the Academy has no funds.

Student assistants in this department in 1926 have been as follows: Russell Hendricks and Cecil Tose, part time work; Douglas Kelly and Ralph Keating, student assistants.

JOSEPH MAILLIARD, *Curator*.
March 31, 1927

DEPARTMENT OF FISHES

During the year 1926 the Curator and the Assistant Curator have given such time as they could devote to the department chiefly (1) assisting Dr. David Starr Jordan in the preparation of a report on the Giant Mackerel-Like Fishes, Tunnies, Spearfishes and Swordfishes¹ of the World; (2) studying (with Mr. Tsen-Hwang Shaw), a small collection of freshwater fishes from Eastern China²; (3) sorting, tagging and accessioning the Ortolan collection of fishes; (4) caring for the collections; and (5), most important of all, working upon a revised Check-List of the Fishes of North and Middle America upon which Dr. Jordan and the Curator have been engaged at intervals for a number of years. Mr. Clark, the Assistant Curator, has given much of his time to this work. He has also given considerable attention to breeding certain species of small aquarium fishes. From September 18 to November 1 the Assistant Curator was in Iowa, Illinois and northern Indiana making collections of live fishes for the Steinhart Aquarium, and the Curator was in the East from October 9 to December 17 visiting museums and aquariums in New York, Philadelphia, Washington and Chicago.

H. WALTON CLARK, *Assistant Curator.*

DEPARTMENT OF HERPETOLOGY

The collection of reptiles and amphibians has maintained a satisfactory growth during the year 1926. There have been added to the collection 2,464 specimens so that it has now grown to 61,750 specimens.

Gifts of specimens have been received as follows: From L. S. Slevin, 2; E. P. Van Duzee, 6; James A. Campbell, 1; Richard P. Erwin, 53; L. M. Klauber, 17; Dr. G. Dallas Hanna, 4; H. W. Clark, 4; J. August Kusche, 1; E. R. Leach, 1; Paul Ruthling, 6; Mrs. E. C. Van Dyke, 2; Mrs. Blanche Fisher, 1; Provincial Museum, Victoria, B. C., 1; and C. R. Kellogg, 1.

Specimens have been secured from 7 counties of California as follows: Fresno, 3; Marin, 2; Monterey, 2; San Diego, 16; San Francisco, 83; Santa Cruz, 1; and Tulare, 1.

Specimens from other localities are: Arizona, 2; Idaho, 53; Indiana, 1; New Mexico, 3; Oregon, 5; Germany, 6; Africa, 1; China, 1; Vancouver Island, 1; Mexico, 2; Guatemala, 2277; Panama, 1; and Santo Domingo, 3.

Mr. Frank Tose, of the Department of Exhibits, has completed a model of the large leather-back turtle presented by the San Francisco International Fish Co. The turtle from which this model was made measured eight feet in length, its front flippers had a spread of eight feet, and it weighed 1286 pounds.

Field work was carried on for a second time in Guatemala, resulting in a collection of 2277 specimens, rich in some of the high mountain forms of salamanders and many species of snakes not taken on the first expedition

¹ Published September 30, 1926, as Occ. Pap. No. XII, Calif. Acad. Sci.

² Published January 31, 1927 in Proc. Calif. Acad. Sci., 4th Ser., Vol. XVI, No. 4, pp. 97-122.

to this region. The thanks of the department are due Señor Juan Zenon Posadas, Jr., of Samayac, Guatemala, whose hospitality and assistance made the expedition a success.

A second field trip was made to the Farallon Islands and a large series of salamanders collected, replacing the original series destroyed in the fire of 1906.

The classification and arrangement of the collection was continued during the year, and, the report on the reptiles taken on the expedition to the Revillagigedo Islands was published.

JOSEPH R. SLEVIN, *Assistant Curator.*

LIBRARY

The total accessions to the library during 1926 number 2541 items, of which about 1300 are pamphlets, 131 are maps and 1118 are complete volumes. Of these complete volumes 112 were received as gifts, 413 on exchange and 593 by purchase. An analysis of these figures shows a most gratifying growth in this department of the Academy. A larger appropriation for books made it possible for each department to purchase a number of very important works. No recent year has shown so large an increase in the technical literature so badly needed by the curators in the several departments. While this increase in the standard technical literature of natural history was an important step in the right direction it was only a step. However, if it can be followed up by similar appropriations for a few more years it will enable the departments to replace many of the valuable books and series destroyed in the fire of 1906. All this especially applies to the three departments of Botany, Paleontology and Entomology, where the output of books essential to systematic work is really enormous and where our present resources are sadly inadequate. The additions made in 1926 helped wonderfully in the technical work of these departments and were most sincerely appreciated. What is true of these three departments is true only in a less degree of all departments. Corresponding additions during a few more years will remove in a great measure the handicap under which our systematic work has been done.

Another cause for satisfaction was the binding of 676 volumes during 1926. While the binding of serials and other books adds nothing to the technical resources of the library, it does add immensely to the readiness with which these resources can be utilized and serves to preserve the books from premature destruction through constant handling. Then the improvement in the looks of the books on the library shelves is certainly a source of satisfaction, if nothing more, to those using them.

Mr. C. A. Bellas remained as library attendant throughout the year. In addition to the care of the library rooms and the accessioning and disposition of all books and other items received, he found time to prepare preliminary lists of the books in the departments of Botany, Paleontology

and Entomology that later can be checked over with the card catalogue of the library.

There has been a satisfactory increase in the use of the library resources by the Academy staff and other students who have had occasion to work on the departmental collections.

EDWARD P. VAN DUZEE, *Assistant Librarian.*

DEPARTMENT OF MAMMALOGY

According to the custom of recent years, this department has been conducted conjointly with the Department of Ornithology, and has participated equally in the field work.

During the field work of the spring and summer, in Trinity, Humboldt, and Mendocino counties, trapping for rodents and other small mammals was constantly carried on, and special efforts were made to secure a series of pocket gophers (*Thomomys*) at every point at which camps were made, from which to work out geographic variation from the interior of the state to the coast region. The Red Tree-Mouse (*Phenacomys longicaudus*) was also kept in mind and was discovered to be resident on the South Fork Mountains, Trinity County, thus extending its known range somewhat farther inland. During the field work in Modoc County special efforts were made to secure certain mammals of species reported or supposed to exist there, but of which no specimens from that region have been recorded and which are now rarely seen. In this work the field party met with only partial success.

An improvement has been made in the Mammal Room in the way of making gas-tight the wall cases in which are stored a large part of the osteological specimens, so that these specimens can be easily and safely fumigated. Among other work connected with this department, Miss McLellan has arranged her time so as to undertake some back work that has long been waiting attention, such as that of bringing up to date the identification and proper labeling of a number of old time specimens in the Academy collection, and making over into study skins some of the alcohols, bats especially. With the exception of some very large ones, the preparation of osteological specimens has been completed to date.

In the past year Mr. Curtis Baird presented the department with a number of skulls of African animals that he had secured on hunting expeditions. Another accession of note was the skeleton of a Prong-horn antelope, found on the summit of Mount Shasta (California), presented by Mr. M. Hall McAllister.

Accessions to the department have been as follows: *By exploration*: 353 specimens. *By gift*: R. Curtis Baird, 42; Mrs. C. S. Capp, 1; T. C. Grant (bequest), 1; E. Hughes, 1; M. Hall McAllister, 1; John McLaren, 1; Mrs. Saxton Pope, 3; Steinhart Aquarium, 5; H. E. Wilder, 1; L. R. Wolfe, 6. *By purchase*: 6 specimens.

JOSEPH MAILLAIRD, *Curator.*

DEPARTMENT OF ORNITHOLOGY

The constant growth of the collections in this department necessitates corresponding expansion of case room, involving rearrangement of specimens from time to time. Such rearrangement, as commenced in the latter part of 1925, has been completed by the assistant curator, Miss. M. E. McLellan, and shows the great need of the department for more extended quarters in which to house the valuable material that is being acquired.

A considerable portion of the year was occupied by the curator in field work. Several weeks in January and February were passed in Placer County, California, principally in banding sparrows of the genus *Zonotrichia*.

Beginning on May 17, field work was carried on in California, with Raleigh Borrell as assistant, on a line extending from the Yolla Bolly Mountains, in Trinity County, west nearly to the coast in Humboldt County, and then south to Laytonville, Mendocino County. Eight camps were made upon this trip, each one being maintained until its possibilities, in the way of supplying new facts or needed specimens, were practically exhausted, when an advance was made to the next locality that seemed to be of promise along the route. This trip was ended at Laytonville, August 11.

On August 27 another field trip was commenced, with Raymond M. Gilmore and Paul F. Covel as assistants, when Eagleville, Modoc County, was again visited. The objects of this expedition were twofold. One object was to endeavor to secure certain birds and mammals to support sight or hearsay records that had never been properly proved, and the other was to band Gambel's Sparrows during the southward fall migration to see what percentage might be secured of those banded in the fall of 1925. Several of the needed species of birds were secured, of which probably the most notable was the Ferruginous Rough-legged Hawk, there being no record of this hawk actually having been secured in northeastern California. Not far from a thousand Gambel's Sparrows were banded, but "returns" of birds banded in the previous fall were very few, the inference being that most of these were migrating along some other route.

At intervals during this work camps were made by one or more members of the party at other promising points, so as to cover as much territory in the county as the length of the visit would permit. This work was brought to a close on October 7, by which time, in this year of drought, but few birds of any species still remained at this elevation.

With the routine work of the department, together with the preparation of a report upon the Academy's recent expedition to the Revillagigedo Islands, and the report upon the field work carried on by herself in Mexico in the fall of 1925, the time of the assistant curator has been very completely filled.

Accessions to the collections have been as follows: Bird skins—*By exploration*: 631 specimens. *By gift*: C. H. Anderson and J. D. Lewis, 1; F. E. Blaisdell (bequest from Mrs. Marie Fuchs), 5; H. Brandt, 1; R. Cabot, 1; H. W. Clark, 1; E. C. Counter, 32; Mrs. Mary C. Fowler, 2; E. W.

Gifford, 1; J. G. Grundell, 1; L. M. Loomis, 1; John McLaren, 1; W. M. Phillips, 2; R. Smith, 1; J. A. Street, 1; H. Trost, 1; E. Walther, 1.

Birds' nests and eggs have been received as follows: *By exploration*: 4 sets of eggs and 1 nest. *By gift*: H. Aldous, 3 sets.

The departmental library has been considerably increased during the year. Notable among the acquisitions are Cassin's *Birds and Mammals of the U. S. Exploring Expedition*, Vieillot's *Oiseaux de l'Amerique septentrionale*, Selater and Salvin's *Exotic Ornithology*, Rothschild's *Avifauna of Laysan*, Elliot's *Birds of North America*, Furbringer's *Morphologie und Systematik der Vogel*, and Brisson's *Ornithologia*.

JOSEPH MAILLIARD, *Curator*.

DEPARTMENT OF PALEONTOLOGY

The activities of the Department of Paleontology during 1926 were largely confined to the arranging of collections made by former expeditions. The explorations conducted by the Academy since 1921 resulted in the accumulation of very large numbers of shells and fossils and to be of use in scientific study these must be sorted, labelled and provided with storage space where they can be readily consulted. This indoor, detailed work is very laborious and time consuming, but is a necessary accompaniment to exploration.

To this end the laboratory was provided during 1926 with some "built in" equipment which greatly facilitates this phase of the work. Certain nondescript pieces of furniture have been eliminated and it can hardly be said that there is a better equipped paleontology laboratory in the country now.

In the early part of January Messrs. Jordan and Hertlein made an automobile trip far into Lower California and they succeeded in bringing back fossils from several horizons which had not been represented in the Academy's collections before. When starting on a similar trip to southern California March 10 an accident occurred which resulted in the death of Mr. Jordan, and the department was severely handicapped the rest of the year through this appalling loss.

On many local trips in the state the Curator managed to collect a considerable quantity of material, chiefly in connection with his studies on the fossil micro-organisms of the state. Being accompanied by accurate geographic and stratigraphic data, this collection, brought together through a series of years, is unquestionably without a rival elsewhere in the world. Late in the year, in cooperation with Mr. Paul Reuderick, a synthetic resin was discovered with refractive index of approximately 1.80. This promises to have wide application in microscopical research.

Many students have continued to use the collections in research and at the end of the year the following loans of specimens were on the records: Dr. Paul Bartsch, U. S. National Museum, Washington, D. C.; Dr. Remington Kellogg, Carnegie Institution; Dr. Mary J. Rathbun, U. S. National Museum; Dr. S. S. Berry, Redlands, Calif.; Dr. Fred Baker, Point Loma, Calif.; Mr. A. M. Strong, Los Angeles, Calif.

G. DALLAS HANNA, *Curator*.

STEINHART AQUARIUM

It is a pleasure to report satisfactory conditions at the Aquarium during the year 1926.

The two outstanding recommendations made by the Superintendent in his report for 1925—that a green-house be built on the roof in which aquatic plants for use in the various balanced aquariums can be cultivated and where small tropical fishes can be bred for experimental purposes, and that additional tanks be supplied with warm salt water,—have been granted. These now form distinct permanent improvements.

That the Aquarium is well regarded by the people of California is attested, not only by the large attendance (953,797), but by the fact that during 1926 gifts which total 4,826 in number have been received. These range from starfish to sea lions, and include a number of alligators. A complete list with the names of the donors will be found in our files.

In the fall of 1926 Dr. Barton Warren Evermann, Director of the California Academy of Sciences and of the Aquarium, visited some of the aquariums of the eastern United States and returned with many helpful suggestions.

In the month of October Mr. Robert J. Lanier of the Aquarium staff returned from New York where he spent his vacation, bringing with him 66 live specimens of eastern fishes, chiefly gifts from the New York Aquarium. Mr. H. Walton Clark secured in the Mississippi Valley and brought to the Aquarium 316 specimens of live fishes.

This is the first time that such fishes as the Red-winged Sea Robin, the Queen Trigger-fish, the Pearl Roach, Darters and many others have ever been seen in the far west. These are now swimming about in our tanks.

The total number of live specimens in the Aquarium tanks December 31, 1926, was 8,096, an increase of 976 during the year. These are divided among the animal kingdom as follows:

Mammals.....	10 specimens of	4 species
Birds.....	1 "	1 "
Reptiles.....	114 "	25 "
Amphibians.....	53 "	9 "
Fishes.....	7570 "	252 "
Invertebrates.....	348 "	10 "
Total.....	8096 specimens	301 species

The above is exclusive of 120,000 Grayling hatched during the year and turned over to the California State Fish and Game Commission, and of 2,000 Salmon and Trout eggs now in the hatchery. A list of all fishes lost during the year will be found in our files.

We suggest the following improvements for the coming year:

That the court in front of the building containing the seal pools be paved with cement and properly drained; that many more fishes from the south be added, especially from the vicinity of the Santa Barbara Islands, and that the Aquarium library be built up.

ALVIN SEALE, *Superintendent.*

FINANCIAL STATEMENTS

REPORT OF THE TREASURER

For the fiscal year ending December 31, 1926

January 1, 1926, Balance due Crocker First National Bank. . . . \$ 3,730.11

Receipts:

Dues	\$ 3,941.75	
Charles Crocker Scientific Fund Endowment		
Income	1,780.30	
James Lick Endowment Income.....	71,648.26	
General Income	18,669.22	
John W. Hendrie Endowment Income.....	960.00	
Publication	366.05	
Interest	850.97	
Ignatz Steinhart Trust Interest.....	520.81	
Ogden Mills Donation	2,000.00	
Bills Receivable	16,000.00	
Bills Receivable Ignatz Steinhart Trust.....	10,000.00	
Wild Life Protection Fund.....	100.00	
Post Card Sales.....	1,581.11	
Dodge Touring Car Indemnity.....	240.00	
W. G. Wright Fund	10.50	
	\$128,668.97	
	\$124,938.86	

REPORT OF THE TREASURER—Continued

Expenditures:

Interest	\$12,590.85
Contingent Fund.....	684.18
Salary Expense General.....	20,132.99
Museum Department Appropriations.....	14,142.70
Museum Department Salaries.....	17,403.27
Insurance	1,899.39
Earthquake Sinking Fund.....	1,200.00
Steinhart Aquarium Equipment.....	228.14
Bills Receivable	20,000.00
Bills Receivable Ignatz Steinhart Trust....	10,000.00
Bills Payable	10,000.00
Sundry Creditors	8,064.26
Wild Life Protection Fund.....	136.76
Publications	2,175.87
Library	7,544.67
Expense	2,835.24
	\$129,038.32

January 1, 1927, Balance due Crocker First National Bank...\$ 4,099.46

M. HALL McALLISTER, *Treasurer.*

Examined and found correct,

McLAREN, GOODE & Co., *Certified Public Accountants.*

San Francisco, Calif., February 9, 1927.

INCOME AND OPERATING EXPENSES

For the fiscal year, January 1, 1926, to December 31, 1926

Income:

Charles Crocker Scientific Fund Endowment	
Income	\$ 1,780.30
James Lick Endowment Income.....	71,648.26
General Income	18,669.22
Dues	3,959.00
Interest from Temporary Investments.....	850.87
Profit on Post Card Sales.....	507.97
Total Income	\$97,415.62

Expenditures:

General Expense	\$ 4,256.57
Salaries	36,841.26
Interest	12,590.85
Insurance	2,442.34
Total Expenditures	\$56,131.02
Net Income Transferred to Surplus Account...	\$41,284.60

SUMMARY OF SURPLUS ACCOUNT

December 31, 1926

Balance January 1, 1926.....\$469,078.81

Additions:

Net Income for Year ended December 31, 1926.....	\$41,284.60	
Ogden Mills Donation.....	3,000.00	
Income from John W. Hendrie Endowment Account	960.00	
W. G. Wright Fund.....	73.74	
Sale of duplicate books.....	22.00	
To offset depreciation on label press sold at original cost	64.75	
Total Additions to Surplus.....	\$ 45,405.09	
		\$514,483.90

Deductions:

Depreciation	\$15,607.57	
Loss on Dodge Touring Car destroyed in wreck	110.00	
Foreign Exchange Account.....	36.84	
		\$ 15,754.41
Surplus, December 31, 1926.....		\$498,729.49

BALANCE SHEET

December 31, 1926

*Assets**Property:*

Real Estate 831-833 Market Street.....	\$600,000.00	
Commercial Building, 833 Market Street.....	516,818.66	
Real Estate, Jessie Street.....	8,083.65	
		\$1,124,902.31

Museum, Golden Gate Park:

Construction	\$192,025.92	
General Collections	169,176.28	
Library and Equipment.....	111,703.68	
Tools and Equipment.....	39,924.17	
Office Furniture	4,525.38	
		\$ 517,355.43
Investment Securities		15,400.00

Ignatz Steinhart Trust:

Bills Receivable	\$ 10,000.00	
Steinhart Aquarium Construction	263,390.29	
Steinhart Aquarium Equipment.....	27,129.87	
Steinhart Aquarium Revolving Fund.....	5,000.00	
Uninvested cash on hand.....	1,013.35	
		\$ 306,533.51

Current Assets:

Bills Receivable	\$ 17,000.00	
Post Cards in Stock.....	1,422.85	
Cash on hand.....	143.35	
Sundry Accounts	100.00	
		\$ 18,666.20

Total		\$1,982,857.45
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BALANCE SHEET (Continued)

*Liabilities**Endowments:*

James Lick Endowment.....	\$804,902.31	
Charles Crocker Scientific Fund Endowment	20,000.00	
John W. Hendrie Endowment.....	13,600.00	
		\$ 838,502.31

Funds Held for Special Purposes:

Alvord Bequest Botanical.....	\$ 5,000.00	
W. G. Wright Fund.....	18.04	
Wild Life Protection Fund.....	395.80	
Henry M. Holbrook Bequest.....	25.28	
Park Birds Handbook Fund.....	20.00	
		\$ 5,459.12

Reserve for Depreciation	\$ 102,051.56
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Ignatz Steinhart Trust:

Principal	\$250,000.00	
Interest	56,533.51	
		\$ 306,533.51

Notes and Accounts Payable:

Bills Payable.....	\$225,000.00	
Accounts Payable, Sundry Trade Creditors..	1,468.65	
Due Crocker First National Bk. (Overdraft)	4,099.46	
Due Ignatz Steinhart Trust.....	1,013.35	
		\$ 231,581.46
Surplus		498,729.49
		\$1,982,857.45

Total	\$1,982,857.45
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W. W. SARGEANT,
Secretary, Board of Trustees.

We have examined the foregoing Balance Sheet, together with the books and accounts of the California Academy of Sciences, and in our opinion, it is properly drawn up so as to exhibit a true and correct view of the Academy's affairs, as shown by the books.

MCLAREN, GOODE & Co.,

Certified Public Accountants.

San Francisco, Calif.,
February 9, 1927.